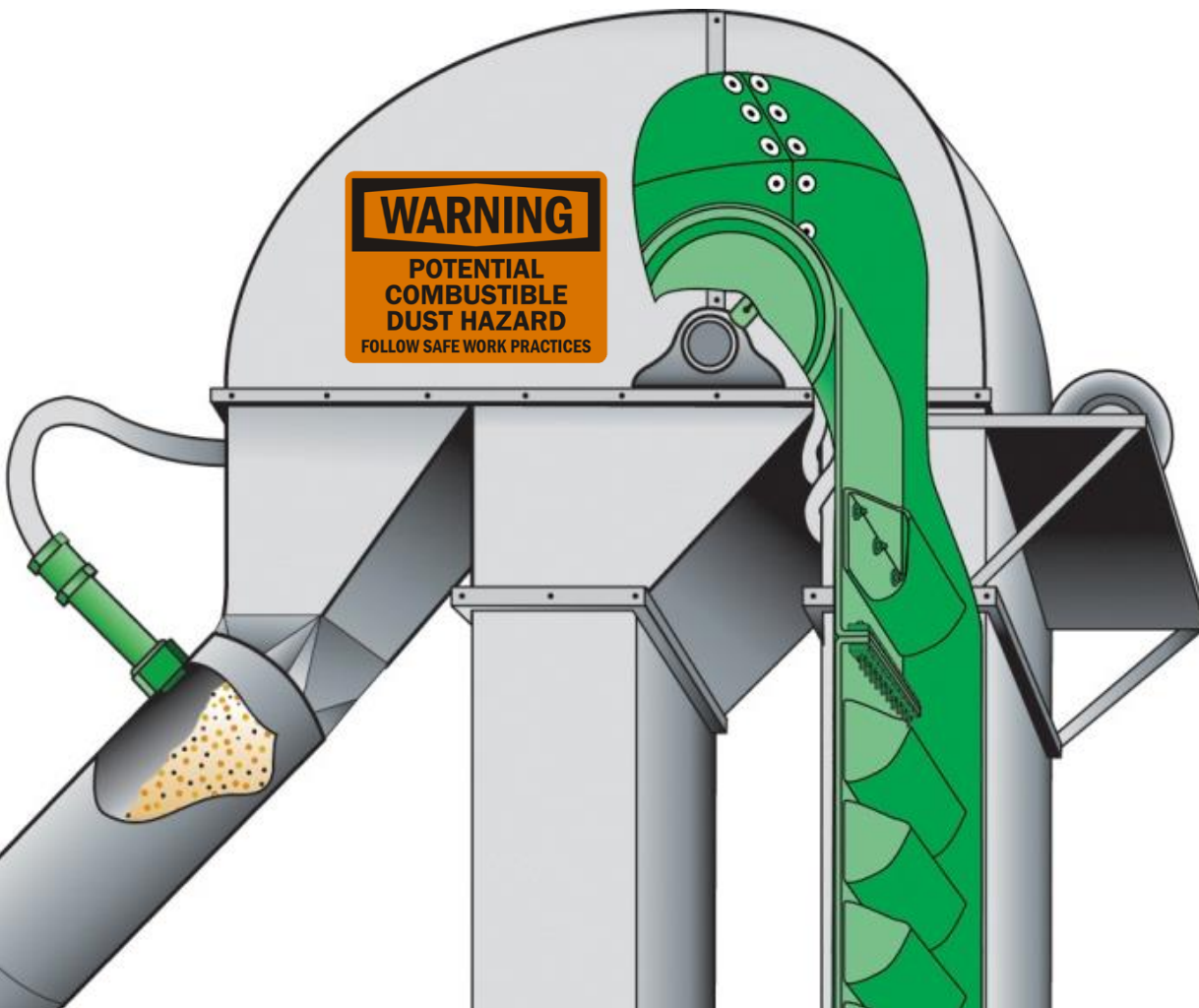
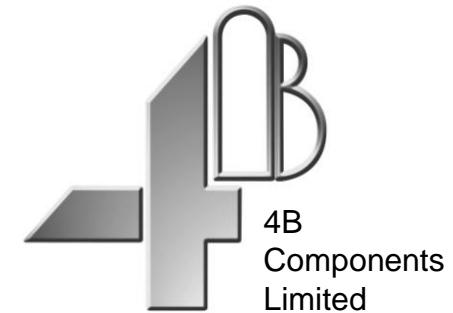


Is YOUR Hazard Monitoring System Safe?

10 Essential Tips To Help Ensure It Is!



PRESENTED BY:
Johnny Wheat



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Morton, IL 61550
USA

1. Make sure that you have selected the correct hazard monitors for the application

A. Need a true underspeed switch to detect belt slip, NOT a stopswitch

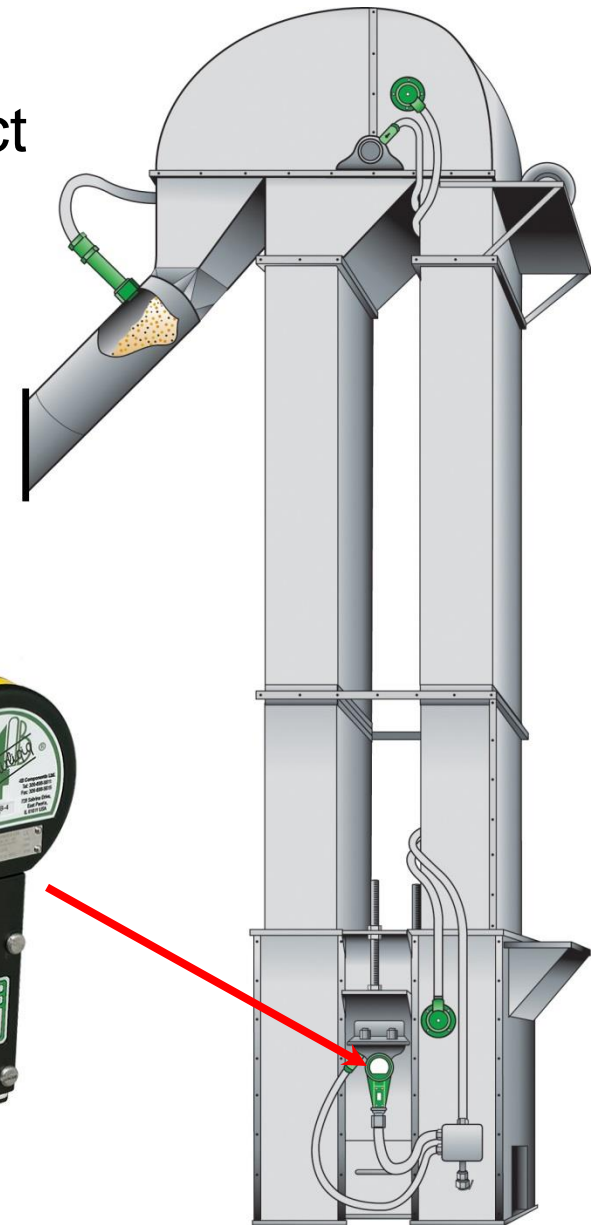


Standard
1910.272(q)(5)

The employer shall equip bucket elevators with a motion detection device which will shut-down the bucket elevator when the belt speed is reduced by no more than 20% of the normal operating speed.



M800 Elite
Speed switch



1. Make sure that you have selected the correct hazard monitors for the application

B. Need continuous bearing temperature monitors, NOT trip point sensors

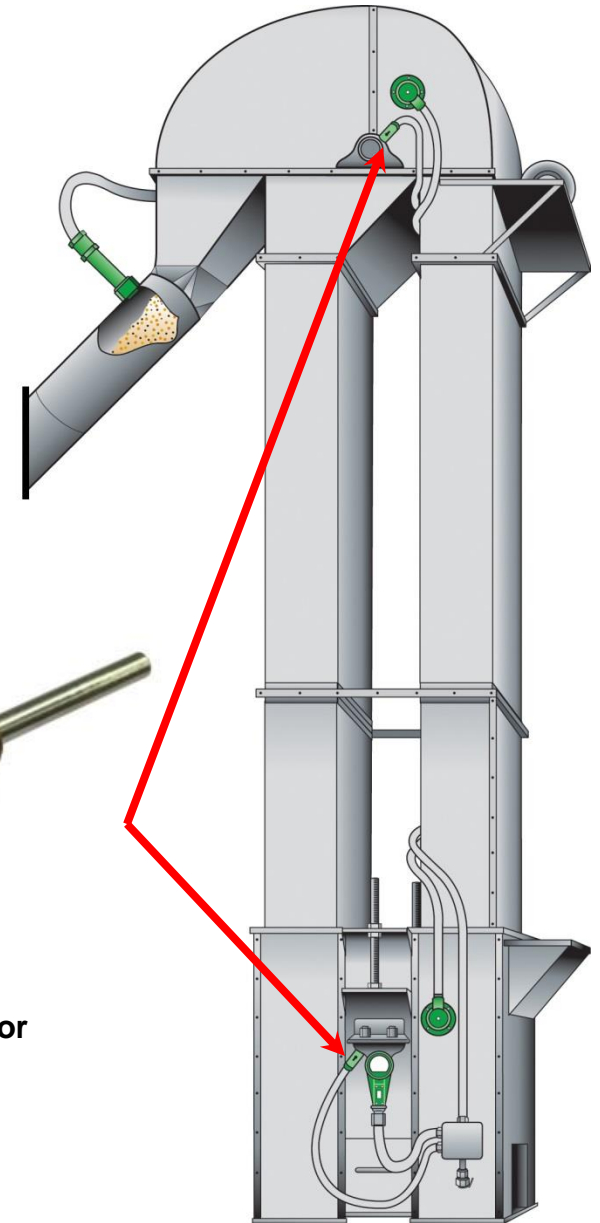


Standard
1910.272(q)(5)

Provide vibration monitoring, temperature monitoring, or other means to monitor the condition of those bearings mounted inside or partially inside the leg casing.



**ADB Bearing
Temperature Sensor**



1. Make sure that you have selected the correct hazard monitors for the application

C. Need a force activated belt misalignment sensor, or non-contact sensor, NOT a brass rub block



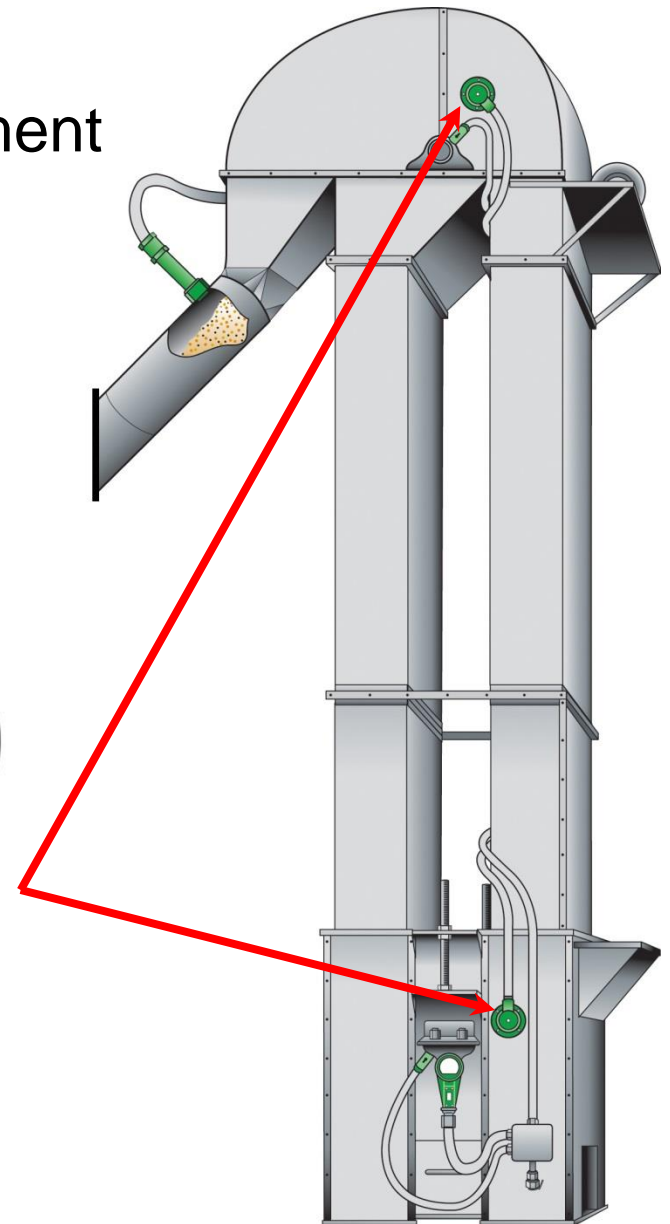
Standards

1910.272(q)(6)(i) &
1910.272 (q)(6)(ii)

Equip bucket elevators with a belt alignment monitoring device which will initiate an alarm to employees when the belt is not tracking properly.

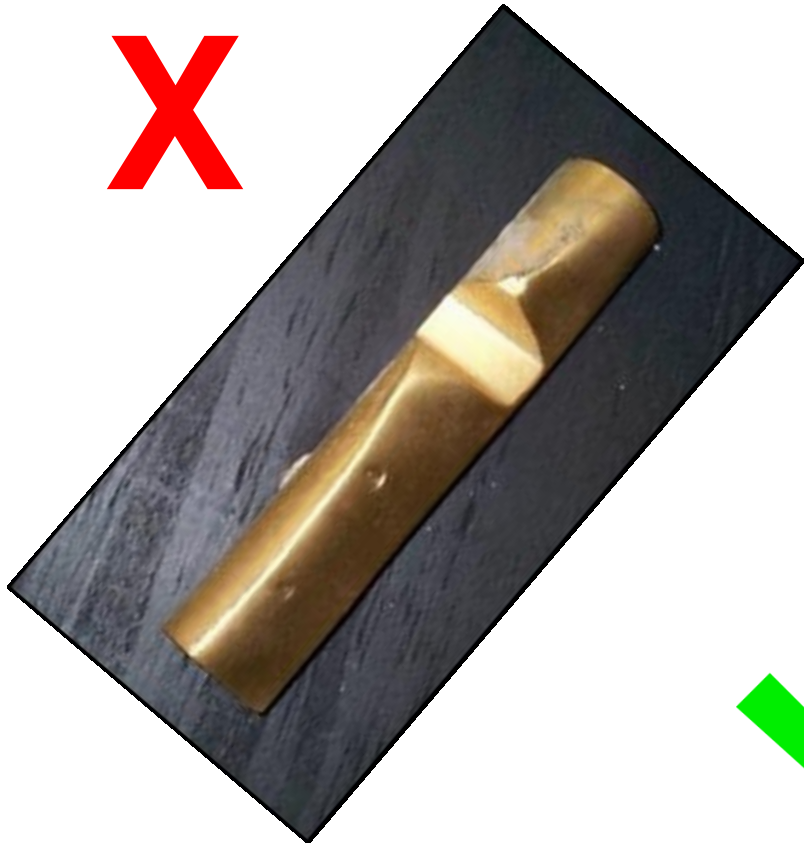


Touchswitch

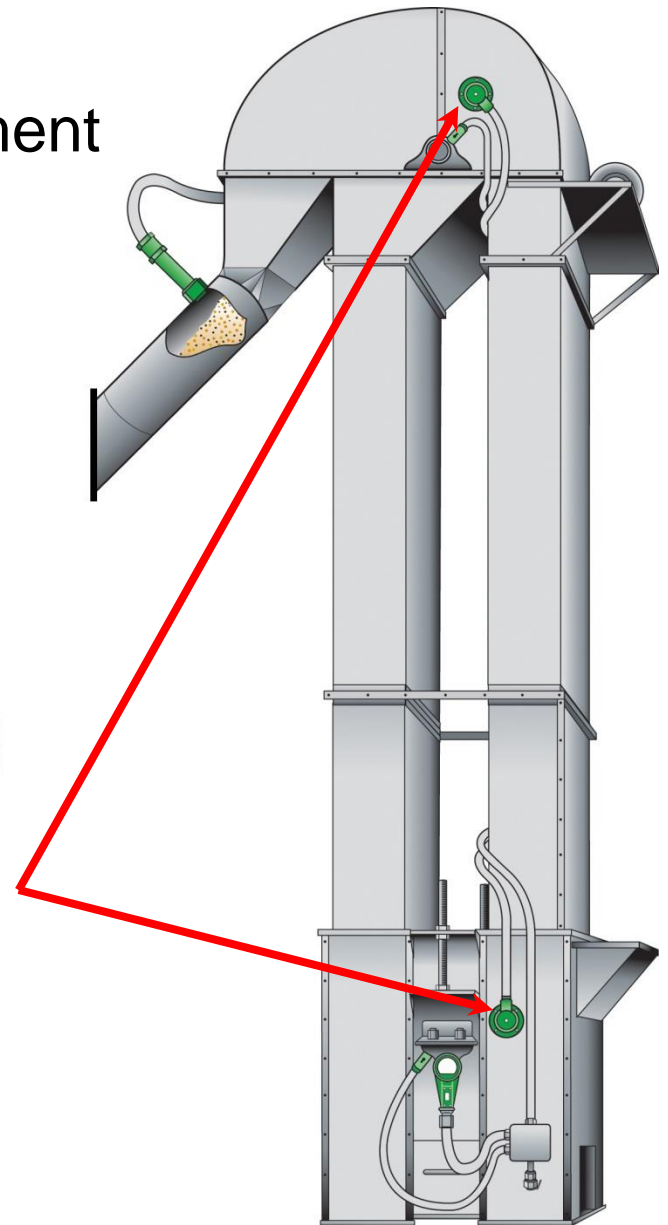


1. Make sure that you have selected the correct hazard monitors for the application

C. Need a force activated belt misalignment sensor, or non-contact sensor, NOT a brass rub block

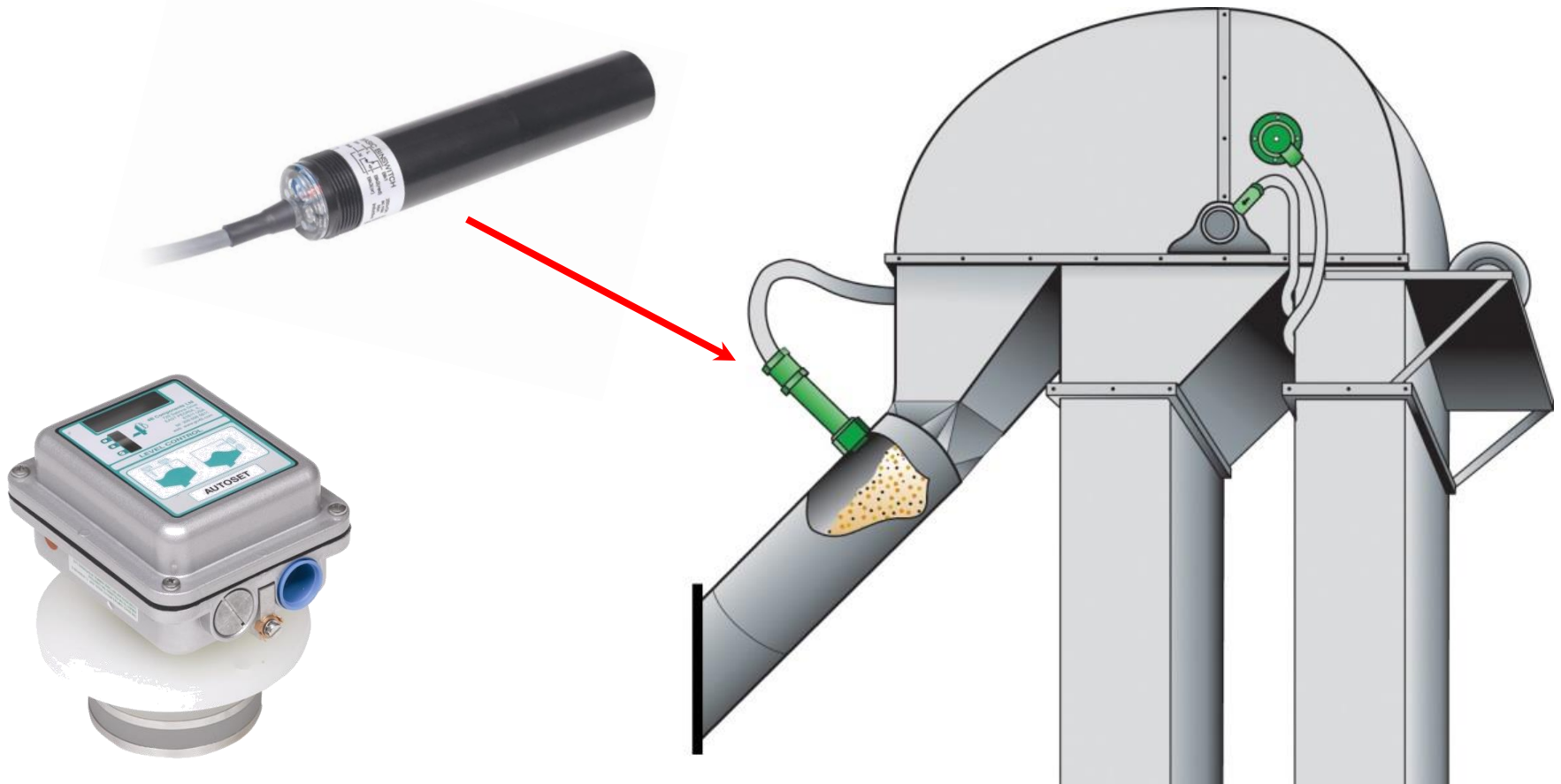


Touchswitch



1. Make sure that you have selected the correct hazard monitors for the application

D. Need a Plugswitch in discharge or head section to detect a blockage



OSHA & NFPA STANDARDS

(See Actual Standard For Full Interpretation: OSHA 1910-272, NFPA 61, NFPA 654)

Hazard	Requirement
Belt Slip	Motion detection device to provide a shutdown and alarm at 20% reduction in normal belt speed. Also shutdown of feeding equipment.
Belt Misalignment	Belt alignment monitoring devices at head and tail pulleys, which initiate an alarm.
Bearing Failure	Bearing temperature or bearing vibration monitors which activate and alarm.
Pulley Misalignment	Head pulley alignment monitors which activate an alarm.
Plugged Spout	Sensors which provide a shutdown and alarm when there is a plug condition. Also shutdown of feeding equipment.

2. Install correctly listed and approved sensors and controls per industry code

- Are the sensors and controls approved for use in dusty environments?

Class I - Flammable gases in sufficient quantities to produce explosive or flammable mixtures.

Class II - The presence of combustible dust.

Class III - Contain easily ignitable fibers and flying's.

Division 1 - Flammable gases, vapors, liquids, combustible dusts or ignitable fibers and flying's are likely to exist under normal operating conditions.

Division 2 - Flammable gases, vapors, liquids, combustible dusts or ignitable fibers and flying's are not likely to exist under normal operating conditions.

Group A - Atmospheres containing acetylene.

Group B - Atmospheres containing hydrogen, gases or vapors of equivalent hazard.

Group C - Atmospheres containing ethyl-ether vapors, ethylene, or cyclo-propane.

Group D - Atmospheres containing gasoline, hexane, benzene, butane, propane, etc.

Group E - Atmospheres containing metal dust.

Group F - Atmospheres containing carbon black, coal, or coke dust.

Group G - Atmospheres containing flour, starch, or grain dusts.



2. Install correctly listed and approved sensors and controls per industry code

- Are the sensors and controls approved for use in dusty environments?

Class II - The presence of combustible dust.

Division 1 - Flammable gases, vapors, liquids, combustible dusts or ignitable fibers and flying's are likely to exist under normal operating conditions.

Division 2 - Flammable gases, vapors, liquids, combustible dusts or ignitable fibers and flying's are not likely to exist under normal operating conditions.

Group G - Atmospheres containing flour, starch, or grain dusts.



3. Use only professional installers familiar with hazard monitoring systems for your industry
 - If you do not have a professionally installed system, then issues will likely arise
 - Send your electrician to the manufacturers facility for training on the equipment to be installed
 - Have the manufacturer install the system or recommend a suitable installer



4. Engage the equipment manufacturer to commission the system and approve the installation
 - Commissioned by the factory or authorized factory technicians, independent from the installers



5. Develop a maintenance policy for system testing and verification

- Periodically test by plant maintenance personnel
- Conduct annual testing by the factory/mannufacturer

OSHA[®]

Standard
1910.272 App A

It is imperative that the prearranged schedule of maintenance be adhered to regardless of other facility constraints. The employer should give priority to the maintenance or repair work associated with safety control equipment...



TYPICAL TEST EQUIPMENT FOR HAZARD MONITORING SYSTEMS



**UNDERSPEED
TESTING**



**BEARING
TEMPERATURE
TESTING**

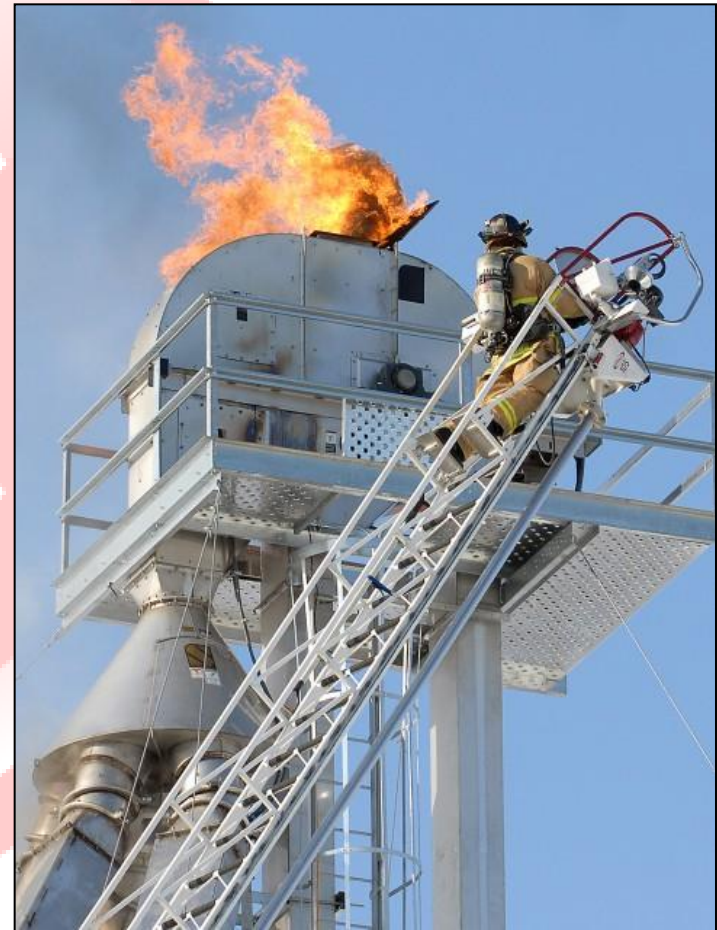
6. Design and implement a hazard monitoring protocol

- What alarm point/s to be set
- What to do when an alarm occurs
- What to do if there is a false alarm



7. Keep essential spare components on hand

- Have spare sensors and components available for immediate replacement so that down time is reduced to a minimum
- ***DO NOT RUN IN BYPASS***



8. Ensure that the system is secure

- Develop a written security policy
- Use password protection for making parameter changes to the system



9. Keep a historical record of alarms and shutdowns

- Log / record all alarms and operation conditions



Date	Time	Type	Site	Device	Sensor	In-alarm Time	Message
Jul. 17, 2013	16:32:55 CDT	Alarm Cleared	Demo Hotbus	Recorded Demo	1.1 BELT ALIGNMENT 6	0:08:10	Contact Closed (ON)
Jul. 17, 2013	16:32:55 CDT	Alarm Detected	Demo Hotbus	Recorded Demo	2.4 BEARING TEMP 9	N/A	Temperature 162° F
Jul. 17, 2013	16:32:46 CDT	Alarm Cleared	Demo Hotbus	Recorded Demo	33.1 DRY LEG SPEED	0:08:37	Underspeed Stop
Jul. 17, 2013	16:32:46 CDT	SN2 Status Change	Demo Hotbus	Recorded Demo	33.1 DRY LEG SPEED	N/A	Running
Jul. 17, 2013	16:24:45 CDT	Alarm Cleared	Demo Hotbus	Recorded Demo	1.4 BEARING TEMP 1	0:25:17	Temperature 145° F
Jul. 17, 2013	16:24:45 CDT	Alarm Detected	Demo Hotbus	Recorded Demo	1.1 BELT ALIGNMENT 6	0:08:10	Contact Closed (ON)
Jul. 17, 2013	16:24:09 CDT	Alarm Detected	Demo Hotbus	Recorded Demo	33.1 DRY LEG SPEED	0:08:37	Underspeed Stop
Jul. 17, 2013	16:11:33 CDT	Alarm Cleared	Demo Hotbus	Recorded Demo	33.1 DRY LEG SPEED	0:10:27	Underspeed Alarm
Jul. 17, 2013	16:11:33 CDT	SN2 Status Change	Demo Hotbus	Recorded Demo	33.1 DRY LEG SPEED	N/A	Running
Jul. 17, 2013	16:01:39 CDT	Alarm Cleared	Demo Hotbus	Recorded Demo	1.1 BELT ALIGNMENT 6	0:08:48	Contact Closed (ON)

T500-2 () Inactive

Please click on the sensor or node to start the maintenance test.

Detailed Node Information (Show all nodes)

Node 1 T500-1 Type: TN4	1.1 # SERVICE 73 °F 00:10:12	1.2 # OK 73 °F	1.3 # OK Contact Open (OFF)	1.4 # OK Contact Open (OFF)	1.5 # OK Ambient 84 °F
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Sensor "" maintenance test started. Please cause an alarm.

Cancel

Node 2 T500-1 Type: TN4	2.1 # OK Contact Closed (ON)	2.2 # OK Contact Open (OFF)	2.3 # OK Contact Open (OFF)	2.4 # OK Contact Open (OFF)	2.5 # OK Ambient 84 °F
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10. Education

- Educate operators on the hazards of grain dust explosions
- Instruct employees that company policy must be followed
- Automatically log all alarms and shutdowns so that operators understand that there is a permanent record and they are accountable.



10 Essential Tips

1. Select the correct hazard monitors for the application
2. Install correctly listed and approved sensors and controls
3. Use only professional installers
4. Engage the equipment manufacturer to commission the system and approve the installation
5. Develop a maintenance policy for system testing and verification
6. Design and implement a hazard monitoring protocol
7. Must have spare components on hand
8. Ensure that the system is secure
9. Keep a historical record of alarms and shutdowns
10. Educate employees and coworkers

QUESTIONS?

